COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NORTHEAST REGIONAL OFFICE
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Thank you for taking the time to review this material. You may be able to implement programs that will conserve energy, use energy more efficiently, introduce renewable energy opportunities to your business and community or reduce your use of toxic materials.

To obtain information from the links you will see in the text below, go to the Northeast Region's web site http://mass.gov/dep/about/region/neroenergy.htm **--- click the highlighted links in the electronic version to go directly to web sites that will give you much more information about the following topics:**

- **Massachusetts Department of Environmental Protection (MassDEP) Information - Energy Conservation & Efficiency; Toxics Use & Waste Reduction Resources**
- **Massachusetts Technology Collaborative Renewable Energy Trust Programs for Business**
- **EPA's Energy Star program [municipalities - see Water and Wastewater energy saving information]**
- **Massachusetts Office of Technical Assistance Fact Sheets and Case Studies related to energy and toxics reduction**
- **EPA Green Remediation Resources**
- **June 2008 Business Guide to U.S. EPA Climate Partnership Programs.**
- **EPA SmartWay program - identifies products and services that reduce transportation-related emissions.**

If you would like additional information or assistance, please contact the MassDEP Northeast Region's Service Center at the letterhead address, by calling 978-694-3314 or by email at DEP.NEROINFO@state.ma.us Please note that this information does not constitute an endorsement in any capacity of any of the nongovernmental organizations or companies listed herein. In addition, this is not an exhaustive list of sources and information on these topics. For example, the MassDEP's web site www.mass.gov/dep has more information about energy issues, waste and toxics reduction, water conservation, all of the MassDEP's permit programs and many other important topics.

MassDEP Information - Energy & Efficiency; Toxics Use & Waste Reduction Resources

To find out what the Commonwealth is doing regarding clean energy, go to the MassDEP's web site: http://www.mass.gov/dep/energy.htm Below is a list of links to grant and incentive programs as well as tools and other resources to help you support clean energy and to promote energy efficiency. In addition, there are many clean energy programs and initiatives underway within the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA), the Division of Energy Resources (DOER), and the Massachusetts Technology Collaborative (see information and links below).

Grants, Incentives & Other Resources

- Funding & Services for Development of Wind Power on Municipal Sites
- Green Buildings and Infrastructure Financial & Technical Support
- How-To Guides for Clean Energy Options
- Low Income Matching Grants
- Matching Grants for Communities' Clean Energy Projects
- Massachusetts & Federal Renewable Energy Tax Incentives
- Model Wind Zoning By-Laws
- Renewable Energy Portfolio Standard
- Renewable Energy Rebates for Homeowners
- Renewable Energy Trust Project Search Tool
- Resources for Communities Making Clean Energy Choices

In addition to the resources above, Massachusetts' 1997 electric utility restructuring law required electric investor-owned utilities to collect separate per-kWh charges from customers to fund such activities as: facility energy audits, energy conservation equipment rebates, new building design incentives, and technical assistance. For more information, see the links below.

Programs & Initiatives

- Green Building & Energy Conservation Leadership
- Massachusetts Division of Energy Resources: Energy Programs & Projects
- Massachusetts Energy Efficiency Partnership
- Massachusetts Green Power Partnership
- Massachusetts Renewable Energy Trust Programs
- Massachusetts State Sustainability Program
- State-wide Energy & Conservation Programs for State Facilities
- State-wide Sustainable Design for Pollution Prevention and Energy Efficiency

Grants, Incentives & Assistance

Municipal Waste Reduction & Climate Protection Grants
State Revolving Fund (SRF)
Fasttrack Permitting

Regional & National Resources

Consortium on Energy Efficiency
http://www.cee1.org/

EPA Municipal Technologies: Energy Conservation and Management Fact Sheets
http://www.epa.gov/owm/mtb/mtbfact.htm
EPA Region 1: Energy & New England
http://www.epa.gov/region01/eco/energy/index.html

EPA Power Profiler: How Clean is the Electricity I Use?
http://www.epa.gov/cleanenergy/powerprofiler

EPA's State & Local Clean Energy Programs
http://www.epa.gov/cleanenergy/stateandlocal/activities.htm

ISO New England
http://www.iso-ne.com/

The Greenroundtable: An affiliate of the US Green Building Council
http://www.greenroundtable.org/

USDA Rural Development Energy Initiatives
http://www.rurdev.usda.gov/rd/energy/

Utilities Providing financial incentives & Energy Efficiency Resources

Cape Light Compact
http://www.capelightcompact.org/

Keyspan Energy
http://www.keyspanenergy.com/energy/choose_region.jsp?sect=/energy/index

National Grid
http://www.nationalgridus.com/masselectric/business/energyeff/energyeff.asp

NSTAR
http://www.nstar.com/business/

Unitil
http://www.unitil.com

Western Massachusetts Electric
http://www.wmeco.com/Business/SaveEnergy/EnergyEfficiencyPrograms/Default.aspx

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Massachusetts
Technology Collaborative
75 North Drive
Westborough, MA 01581
Phone: (508) 870-0312
Fax: (508) 898-2275

Renewable Energy Trust Programs for Business

The Massachusetts Technology Collaborative (MTC) is an initiative of the Massachusetts Technology Park Corporation (MTPC), an independent instrumentality of the Commonwealth created in 1982 to advance the growth of the technology sector of the Massachusetts economy through collaborative activities among

industry, universities and state government. MTC is the state's development agency for renewable energy and the innovation economy, which is responsible for one-quarter of all jobs in the state.

MTC uses a collaborative approach to achieving the organization's mission. MTC brings together leaders from industry, academia, and government to advance technology-based solutions that lead to economic growth and a cleaner environment in Massachusetts. For more information about MTC and the programs it offers, please see their web site at: http://www.masstech.org

By developing energy from wind, solar, and other renewable resources, MTC is reducing our reliance on coal, oil, and other fossil fuels that contribute to air pollution and global warming. Investments in the emerging clean energy market stimulate new economic activity in the renewable industry and job growth across Massachusetts. In order to facilitate such activity, MTC has developed and administers the **Renewable Energy Trust.** The Trust seeks to maximize environmental and economic benefits for the Commonwealth's citizens by pioneering and promoting clean energy technologies and fostering the emergence of sustainable markets for electricity generated from renewable sources. The Trust provides financial assistance to individuals and businesses for solar panels and wind turbines at their homes and facilities, works with communities to incorporate green design into schools, helps emerging clean energy businesses flourish in the Commonwealth, and much more. The Trust works through a variety of programs geared towards these different groups to provide many avenues for the Commonwealth to become greener. Choose your group below to see which programs may be right for you. If you would like more information about renewable energy technologies and suggestions for what you can do, go to the MTA's **Energy Information** website.

Individuals

Commonwealth Solar: Learn about rebates for solar photovoltaic (PV) systems up to 5 kilowatts for homeowners>>

Small Renewables Initiative: Learn about rebates for wind turbines and microhydroelectric systems (up to 10 kilowatts)>>

Clean Energy Choice®: Support clean energy through your electric utility bill or a donation, and earn matching grants for your community in the process>>

Businesses and Nonprofits

Commonwealth Solar: Learn about rebates for solar photovoltaic (PV) systems up to 500 kilowatts for businesses, nonprofits, public buildings, and other non-residential facilities>>

Large Renewables Initiative: Learn about grants for renewable energy systems like wind turbines, fuel cells, and biomass energy systems to power your facility (greater than 10 kilowatts)>>

Small Renewables Initiative: Learn about rebates for smaller wind turbines, or microhydroelectric systems (up to 10 kilowatts)>>

Clean Energy Choice®: Support clean energy through your electric utility bill or a donation, and earn matching grants for your community in the process>>

Communities

Green Schools Initiative: If your town or city is considering building a new school or making major renovations to an existing school building, learn about the environmental, economic, and health benefits of green schools, and opportunities available through the Trust and the Mass. School Building Authority>>

Commonwealth Solar: Learn about rebates for solar photovoltaic (PV) systems up to 500 kilowatts for public buildings>>

Large Renewables Initiative: Learn about grants for renewable energy systems like wind turbines, fuel cells, and biomass energy systems to power public buildings (greater than 10 kilowatts)>>

Small Renewables Initiative: Learn about rebates for smaller wind turbines, or microhydroelectric systems to power public buildings (up to 10 kilowatts)>>

Clean Energy Choice®: When residents of eligible communities sign up to support clean energy through their electric utility bill, your town or city earns matching grants that can be used towards solar panels or other renewable energy-related projects. Learn why it pays to encourage residents to support clean energy through MTC's Clean Energy Choice® program>>

Community Wind Collaborative: If your community has sufficient wind resources, the Trust can provide technical and financial assistance for community-scale wind energy projects. Learn about community wind projects>>http://masstech.org/renewableenergy/Community_Wind/index.htm

Predevelopment Financing Initiative: If your community is interested in developing other large-scale (greater than 250 kW) renewable energy generation systems, such as landfill gas, biomass or hydropower, it may be eligible for support for a feasibility study. Learn about available assistance>>

Community Energy Opportunities: To identify which energy-saving measures might be right for you, learn about new opportunities for communities to receive energy consulting assistance>>

Clean Energy Entrepreneurs

Learn about various opportunities available for clean energy technology companies>>

Energy Generation Project Developers

If you are a developer of renewable energy generation projects, the Trust has several programs to help you build your project in Massachusetts>>

Affordable Housing Developers

By making your affordable housing project "green" through energy efficiency and renewable energy technologies, you can qualify for assistance through the Trust. Learn how>>

Educators and Activists

Teachers: learn more about incorporating renewable energy lessons into your curriculum. Free lesson plans and other resources are available>>

Activists and Outreach groups: learn about periodically available opportunities for receiving grants to raise public awareness about renewable energy>>

EPA Energy Star program - Commercial and Industrial Business Sector - Energy Efficiency and Savings: Increasing energy efficiency in the commercial and industrial sectors offers sizable opportunities for cost savings while avoiding emissions of greenhouse gases. These sectors contribute about 37 percent of the nation's greenhouse gases, with buildings alone contributing 15 percent.

ENERGY STAR is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy helping us all save money and protect the environment through energy efficient products and practices. Please go to their web site for more information - **https://www.energystar.gov/**

Participants in the ENERGY STAR program have saved enough energy in 2007 alone to avoid greenhouse gas emissions equivalent to those from 27 million cars — all while saving $16 billion on their utility bills.

EPA offers ENERGY STAR to businesses and other organizations as a straightforward way to adopt superior energy management and realize the cost savings and environmental benefits that can result. EPA promotes a strategy that starts with the top leadership, engages the appropriate employees throughout the organization, uses standardized measurement tools, and helps an organization prioritize and get the most from its efficiency investments. While EPA has made significant progress promoting greater energy efficiency across these sectors, much more needs to be done. Thousands of organizations have partnered with EPA in the pursuit of superior energy management. These partners include public organizations such as state and local governments, schools, and universities, hundreds of businesses across commercial and industrial sectors and thousands of small businesses.

The following provides additional information about energy management resources and other forms of assistance as well as an important ENERGY STAR water and wastewater treatment plant project.

Additional Energy Star Links:

Guidelines for Energy Management

Get started by applying our proven strategy to set performance goals, create and implement action plans, assess performance and progress, and recognize your organization's achievements.

Commercial Building Design

Make energy performance a priority in your next building's design. Use Target Finder to set your energy performance target.

Green Buildings and Energy Efficiency

Make sure your buildings deliver environmental and financial results.

Energy Strategy for the Future

Discover the steps U.S. businesses should take today to prepare for the energy challenges that lie ahead. Learn more about the recommendations of twenty leading U.S. companies in the ground-breaking report, Energy Strategy for the Road Ahead (619KB).

Tools:

Tools & Resources Library, including free resources, like Portfolio Manager, to assist your organization in meeting its energy performance goals.

Experienced Professionals:

Expert Help found through use of directories of service and products providers and energy efficiency program sponsors.

Networking Opportunities with peers who have successfully used energy management best practices.

Training including Introduction to ENERGY STAR, Creating Action Plans, Assessing Performance, and Financing Strategies.

ENERGY STAR for Wastewater Plants and Drinking Water Systems:

The nation's wastewater plants and drinking water systems spend about $4 billion per year on energy to treat water. Individually, these operating costs can add up to one-third of a municipality's total energy bill.

As many communities strive to reduce operating costs and greenhouse gas emissions, EPA's ENERGY STAR program has introduced expanded energy efficiency tools and resources to help eliminate energy waste and lower operating costs of water and wastewater utilities. A 10 percent reduction in U.S. drinking water and wastewater systems — realized through cost-effective investments — would collectively save approximately $400 million and 5 billion kWh annually.

Managers of drinking water systems and wastewater treatment plants can now track energy use, energy costs, and associated carbon emissions by using Portfolio Manager, EPA's online benchmarking tool. Portfolio Manager also offers wastewater treatment plant managers the ability to compare the energy use of their plants with other peer plants using the EPA energy performance rating system.

What Facility Managers Can Do

- Learn more about Energy Star and Portfolio Manager for drinking water systems and wastewater plants at: http://www.energystar.gov/waterwastewater
- Other activities that explore the nexus between water and energy are described at: epa.gov/waterinfrastructure/bettermanagement_energy.html

Related Resources

- Wastewater Treatment Plant Rating Technical Methodology (400KB)
- US EPA Office of Water Sustainable Infrastructure
- American Waterworks Association Research Foundation
- The Consortium for Energy Efficiency (CEE) National Municipal Water and Wastewater Facility Initiative

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Executive Office of Energy and Environmental Affairs
Office of Technical Assistance and Technology
100 Cambridge St., Boston MA 02114 tel – 617-626-1060

Links to OTA Fact Sheets and Case Studies are provided below. OTA's main web site is http://www.mass.gov/envir/ota/

The Office of Technical Assistance (OTA) is a non-regulatory office within EEOA that helps business and industry reduce or eliminate their use of toxics and the generation of hazardous by-products.

OTA also provides assistance on energy issues. OTA has several fact sheets that give quick, informative overviews of topics such as energy efficiency, regulatory requirements for reporting under the Toxics Use Reduction Act (TURA), environmentally preferable purchasing, and technologies that eliminate or reduce reliance on toxics. Here are some example fact sheet topics.

What You Should Know About Installing On-site Renewable Energy for Your Massachusetts Business
An increasing number of businesses in the Commonwealth are taking an interest in renewable energy. Reasons include wanting to cut energy costs, reduce dependence on fossil fuels, minimize greenhouse gas emissions, stay competitive, and be a responsible neighbor within their community. The Office of Technical Assistance and Technology (OTA) is committed to helping businesses achieve these goals. The following fact sheet addresses some of the most common questions regarding renewable energy in Massachusetts.

What You Should Know About Installing On-site Renewable Energy for Your Massachusetts Business

Energy Saving Tips for Industrial and Commercial Buildings
Energy is a significant and growing cost for most businesses. A review of how energy is used in buildings and then targeting improvements in equipment and procedures can lead to big cost savings. Furthermore, many corporate and government programs now strongly encourage energy conservation. The purpose of the following fact sheet is to provide examples of energy saving tips for the general categories of building energy use that apply to most facilities. (Potential savings in direct process uses, common to heavy industry, can be found in OTA's fact sheet Overview of Energy Efficiency Techniques and Resources.)

Energy Saving Tips for Industrial and Commercial Buildings

Overview of Energy Efficiency Techniques and Resources for Massachusetts Industries
As energy costs rise, more companies are searching for ways to reduce their energy consumption in order to decrease their dependence on fossil fuels and stay competitive. The following fact sheet will assist facility energy managers in developing energy management strategies for their companies and identifying techniques and funding sources for increasing the energy efficiency of their manufacturing operations. It also includes a wide variety of resources and tools to assist in these efforts.

Overview of Energy Efficiency Techniques and Resources for Massachusetts Industries

Overview of Water Conservation Techniques and Resources for Massachusetts Industries
Water has long been considered a utility item to be accounted for as a general overhead expense of production. Since water has become a limiting resource for economic development, and the costs of using and heating water continue to rise, it is important to treat water as one of the raw materials for production. Water is a resource that has to be managed properly, and can help save money – water conservation projects can have payback periods as short as a year or less. This fact sheet is designed to help facilities identify and implement water conservation measures.

Maintaining Up-to-Date Material Safety Data Sheets (MSDS) Fact Sheet:
Several environmental, health and safety regulations require Massachusetts facilities to maintain copies of Material Safety Data Sheets (MSDS) for every chemical used and/or stored on site. This advisory addresses a handful of specific issues concerning MSDS that all facilities should be aware of.
Maintaining Up-to-Date Material Safety Data Sheets (MSDS) Fact Sheet (pdf file)

MUNICIPAL:

Environmentally Preferable Purchasing for Municipal Agencies Fact Sheet:
This fact sheet was developed by OTA based on the results of a federally funded grant program. OTA distributed money to cities and towns that agreed to purchase environmentally preferable products or services. This fact sheet covers the benefits and costs associated with the products/services that were

purchased and recommendations from each municipality. Environmentally Preferable Purchasing for Municipal Agencies Fact Sheet (pdf file)

Best Management Practices for Pollution Prevention at Municipal DPWs Fact Sheet: This Best Management Practices Fact Sheet is a compilation of common recommendations for Departments of Public Works (DPWs) that originated from on-site technical assistance evaluations by the Massachusetts Office of Technical Assistance and Technology (OTA). The fact sheet highlights some of the simple pollution prevention practices specifically for DPWs to integrate into their daily routine that will improve worker safety and protect the environment. Best Management Practices for Pollution Prevention at Municipal DPWs (pdf file)

OTA TECHNOLOGY CASE STUDIES: OTA technology case studies profile actual applications of pollution prevention technologies and processes that businesses, municipalities, and other toxic users across Massachusetts have implemented. The case studies help manufacturers in similar industry sectors understand how they might benefit from adopting these pollution prevention strategies. Also, the case studies generate public awareness of industry's environmental progress

Case Study Company	P2 Technology/Process	Industry Sector
Acushnet Rubber Company	Management system	Rubber
AlphaGary Corporation	Chemical Use reduction	Wire and Cable
Berkshire Industries	Chemical Use reduction	Fabricated metal products
BOC Edwards	Water use reduction	Pump manufacturer
Brittany Dying & Printing	Energy & water use reduction	Textiles
Brownell Boat Stands	Low-VOC coating	Metal finishing
Burlington Board of Health	Pollution prevention policies	Municipal
Columbia Manufacturing, Inc.	Water use reduction	Furniture and Fixtures
Coyne Textile Services	Chemical and water use reduction	Commercial laundry
Crane & Company	Chemical use reduction	Paper manufacturer
Cranston Print Works, Inc. (I)	Chemical use substitution	Textiles
Cranston Print Works, Inc. (II)	Water use reduction	Textiles
Crest Foam	Chemical use substitution	Polyurethane manufacturer
Decorated Products	Chemical use reduction	Printing
Delaware Valley Corporation	Heat recovery	Fabricated metal products
ESP (Hudson) Locks	Non-VOC lubricant	Metal finishing
F.C. Meyer Company	Waste reduction	Printing
Fit To Print	Non-VOC coating	Printing
GKN Sinter Metals Corp.	Water use reduction	Fabricated metal products
Hampden Papers – TURA	Chemical use substitution & elimination	Paper coating
Hampden Papers – VOC	Non-VOC coating	Paper coating
Inner-Tite Corporation	Closed-circuit degreasing	Metal working
InteliCoat Technologies	Non-VOC coating	Paper coating
The J. M. Perrone Company	Chemical use reduction	Printing
Kidde-Fenwal Inc.	Non-VOC coating	Building controls manufacturer
Korber Hats	Non-VOC coating	Textiles
Lightolier	Chemical use reduction	Fabricated metal products
Novacor Chemicals, Inc.	Material storage practices	Polystyrene manufacturer
Olympic Manufacturing (Now OMG, Inc.)	Coolant recycling	Metal working

Perstorp Compounds	Chemical use reduction	Plastics
Poly-Plating	Chemical and water use reduction	Metal finishing
Smith & Wesson	Non-VOC cleaner	Metal finishing
Testing Laboratory	Chemical use reduction	Testing laboratory
The Robbins Company	Chemical and water use reduction	Metal finishing
SouthCoast Technical Products	Filtratration	Papers and Allied Products
Tubed Products (Now Berry-Tubed Products Inc)	Non-VOC coating	Plastics coating
V.H. Blackinton & Co.	Chemical and water use reduction	Metal finishing

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MassDEP regulates the investigation and cleanup of property that is contaminated with oil or hazardous materials. The Massachusetts Contingency Plan (the "MCP"; 310 CMR 40.0000) contains the cleanup standards and requirements to be followed by responsible parties. MassDEP is committed to developing and promoting innovative cleanup strategies that restore contaminated sites to productive use, reduce costs, and promote environmental stewardship, while ensuring that cleanups are protective of human health and the environment. In line with this commitment, the Department supports GREEN REMEDIATION as a means to use natural resources and energy efficiently, reduce negative impacts on the environment, minimize pollution at its source, and reduce waste to the greatest extent possible.

The information below is extracted from EPA's Hazardous Waste Clean-Up Information (CLU-IN) GREEN REMEDIATION web site http://clu-in.org/greenremediation/ The main CLU-IN web site http://clu-in.org/ provides information about innovative treatment and site characterization technologies to the hazardous waste remediation community. It describes programs, organizations, publications, and other tools for federal and state personnel, consulting engineers, technology developers and vendors, remediation contractors, researchers, community groups, and individual citizens. The site was developed by EPA but is intended as a forum for all waste remediation stakeholders.

GREEN REMEDIATION results in effective cleanups minimizing the environmental and energy "footprints" of site remediation and reuse. Sustainable practices emphasize the need to more closely evaluate core elements of a cleanup project:

- Energy requirements of the treatment system,
- Air emissions,
- Water requirements and associated impacts on water resources,
- Impacts on land and ecosystems,
- Material consumption and waste generation, and
- Long-term stewardship actions.

The following links will connect you to information on the listed topics:

- Green Remediation: Incorporating Sustainable Environmental Practices into Remediation of Contaminated Sites. EPA/OSWER Office of Superfund Remediation and Technology Innovation. Technology Primer: EPA 542-R-08-002. April 2008.
  Green Remediation Technology Primer
- Incorporating Sustainable Practices into Site Remediation. EPA/OSWER Office of Superfund Remediation and Technology Innovation. Quick Reference Fact Sheet: EPA 542-F-08-002. April 2008.
  Quick Reference Fact Sheet on Green Remediation

Renewable Energy Sources for Remediation

- Green Remediation and the Use of Renewable Energy Sources for Remediation Projects. Amanda Dellens, EPA/OSWER internship. August 2007.
  http://clu-in.org/s.focus/c/pub/i/1474/

- Groundwater Remediation Powered by a Renewable Energy Source. Curt Elmore and Ron Gallagher, University of Missouri-Rolla. September 2005.
  Mead Final Report Rev 0.pdf

- Smart Energy Resources Guide. Jennifer Wang, EPA National Risk Management Research Laboratory (Office of Research and Development) & Region 9 internship. March 2008. EPA 600/R-08/049.
  http://www.epa.gov/nrmrl/pubs/600r08049/600r08049.htm

- Technology News and Trends: Harnessing energy from renewable resources to reduce remediation costs and minimize the environmental footprint. EPA/OSWER. Issue No. 30: EPA 542-N-06-009. May 2007.
  http://clu-in.org/products/newsltrs/tnandt/view.cfm?issue=0507.cfm#1

Tools for Daily Operations

- Clean Energy: Greenhouse Gas Equivalencies Calculator.
  http://www.epa.gov/cleanenergy/energy-resources/calculator.html

- Clean Energy: Power Profiler.
  http://www.epa.gov/cleanenergy/energy-and-you/how-clean.html

- Cleaner Diesels: Low Cost Ways to Reduce Emissions from Construction Equipment. EPA/National Center for Environmental Innovation. EPA 100-R-07-002. March 2007.
  http://www.epa.gov/sectors/construction/

- Integrating Water and Waste Programs to Restore Watersheds: A Guide for Federal and State Project Managers. EPA/OSWER. EPA 540K07001. August 2007.
  http://www.epa.gov/superfund/resources/integrating.htm

Evolving Practices

Increasing concerns regarding climate change have prompted major efforts across the globe to reduce greenhouse gas (GHG) emissions caused by activities such as fossil fuel consumption. EPA's strategic plan calls for significant reductions in GHG emissions as well as increases in energy efficiency, as required by federal mandates such as Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*. Accordingly, one category of EPA's evolving practices for green

remediation places greater emphasis on approaches that reduce energy consumption and GHG emissions. Another category focuses on related "greening" goals concerning water conservation. Best management practices (BMPs) include:

- Designing treatment systems with optimum efficiency, and modifying existing systems as needed,
- Using renewable sources such as wind and solar energy to meet power demands of energy-intensive treatment systems or auxiliary equipment,
- Generating electricity from byproducts such as methane gas or secondary materials,
- Participating in power generation or purchasing partnerships offering electricity from large-scale renewable resources,
- Minimizing fresh water consumption and maximizing water reuse during treatment processes,
- Preventing impacts such as nutrient loading on water quality in nearby water, and
- Reclaiming treated water for beneficial use such as irrigation or for storage through aquifer reinjection.

Building on Current Practices

Sustainable site cleanup and revitalization reflects sound decision-making that balances environmental, social, and economic factors. Green remediation builds on environmentally conscious practices already used by public agencies and within business sectors, and promotes incorporation of state-of-the art methods for:

- Conserving water,
- Improving water quality,
- Increasing energy efficiency,
- Managing and minimizing toxics,
- Managing and minimizing waste, and
- Reducing emission of criteria air pollutants and GHG.

Where and When to Apply Green Remediation Strategies

Green remediation practices may be applied to cleanup actions taken at almost any hazardous waste site, whether conducted under federal, state, or local cleanup programs or by private parties. The practices apply holistically to all phases of site assessment, remediation, and reuse, including removal actions, site investigations, remedy construction, operation of treatment systems, monitoring of treatment processes and progress, and site close-out. To maximize sustainability, cleanup and reuse options are considered early in the planning process, enabling Best Management Practices (BMPs) during remediation to carry forward. Green remediation strategies apply to all types of activities undertaken during all stages of a site cleanup and land revitalization project.

Benefits of Green Remediation

Implementation of the best practices of green remediation results in a range of benefits:

- Reduction in fossil fuel consumption and GHG emissions,
- Better conservation of water and other natural resources,
- Cost savings derived from improved efficiencies of energy-intensive treatment systems and from increased optimized use of passive-energy treatment systems,
- Educational opportunities regarding environmental stewardship and sustainable activities, and
- Regional employment opportunities associated with renewable-energy businesses formed at revitalized sites.

Advancing the Use of Green Remediation Practices

To foster green remediation strategies, EPA's Office of Solid Waste and Emergency Response is working with private and public partners to:

- Document the state of BMPs,
- Identify opportunities for improvement,
- Establish a community of BMP practitioners, and
- Develop mechanisms and tools facilitating the use of green practices.

Partners include other federal agencies such as the U.S. Departments of Energy, Defense, and Agriculture; state environmental agencies; and local development agencies or other organizations involved with site cleanup and revitalization. To help site cleanup and reuse stakeholders make informed decisions about green remediation strategies, EPA's web site http://clu-in.org/greenremediation/ provides documents and information links for:

- Case studies on green approaches already in place at hazardous waste sites and brownfields,
- Guidance and research reports on technical issues such as treatment system optimization, renewable energy sources, and site management techniques,
- Partnerships and opportunities enabling participation in renewable-energy mechanisms such as state incentive programs and regional power purchase agreements, and
- Links to related initiatives, organizations, references, and data sources.

EPA June 2008 Business Guide to U.S. EPA Climate Partnership Programs http://www.epa.gov/partners/Biz_guide_to_epa_climate_partnerships.pdf

In June 2008, EPA released a new resource, *A Business Guide to U.S. EPA Climate Partnership Programs*, for businesses committed to addressing the risks and opportunities associated with climate change. The guide features profiles on 35 EPA climate-change related partnership programs, as well as a handy table so companies can look up programs most appropriate for their industry and business objectives. Each program profile defines the environmental value delivered by the program and the business case for participating, such as cost savings, operational efficiency, reduced business risk, new or expanded markets, enhanced reputation and brand protection.

SmartWay℠ The Smart Way to Save Fuel, Money, and the Environment

You can find EPA's SmartWay℠ program information at
http://www.epa.gov/otaq/smartway/index.htm

The following is from this web site:

In its simplest form, the SmartWay brand identifies products and services that reduce transportation-related emissions. However, the impact of the brand is much greater as the SmartWay brand signifies a

partnership among government, business and consumers to protect our environment, reduce fuel consumption, and improve our air quality for future generations.

All of EPA SmartWay transportation programs result in significant, measurable air quality and/or greenhouse gas improvements while maintaining or improving current levels of other emissions and/or pollutants.

EPA believes the quality of the environment is everyone's responsibility; therefore, SmartWay is positioned as a personal choice that can make a difference for the environment.

Find out what you can do to save fuel, money, and the environment with SmartWay:

SmartWay Vehicles

Fuel Options

SmartWay Transport Partnership

SmartWay Tractors and Trailers

SmartWay Financing Options